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Title:	Initiator Design Update post FDR - Gentzlinger
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Source Physics Experiment Phase II

Initiator Update Post FDR

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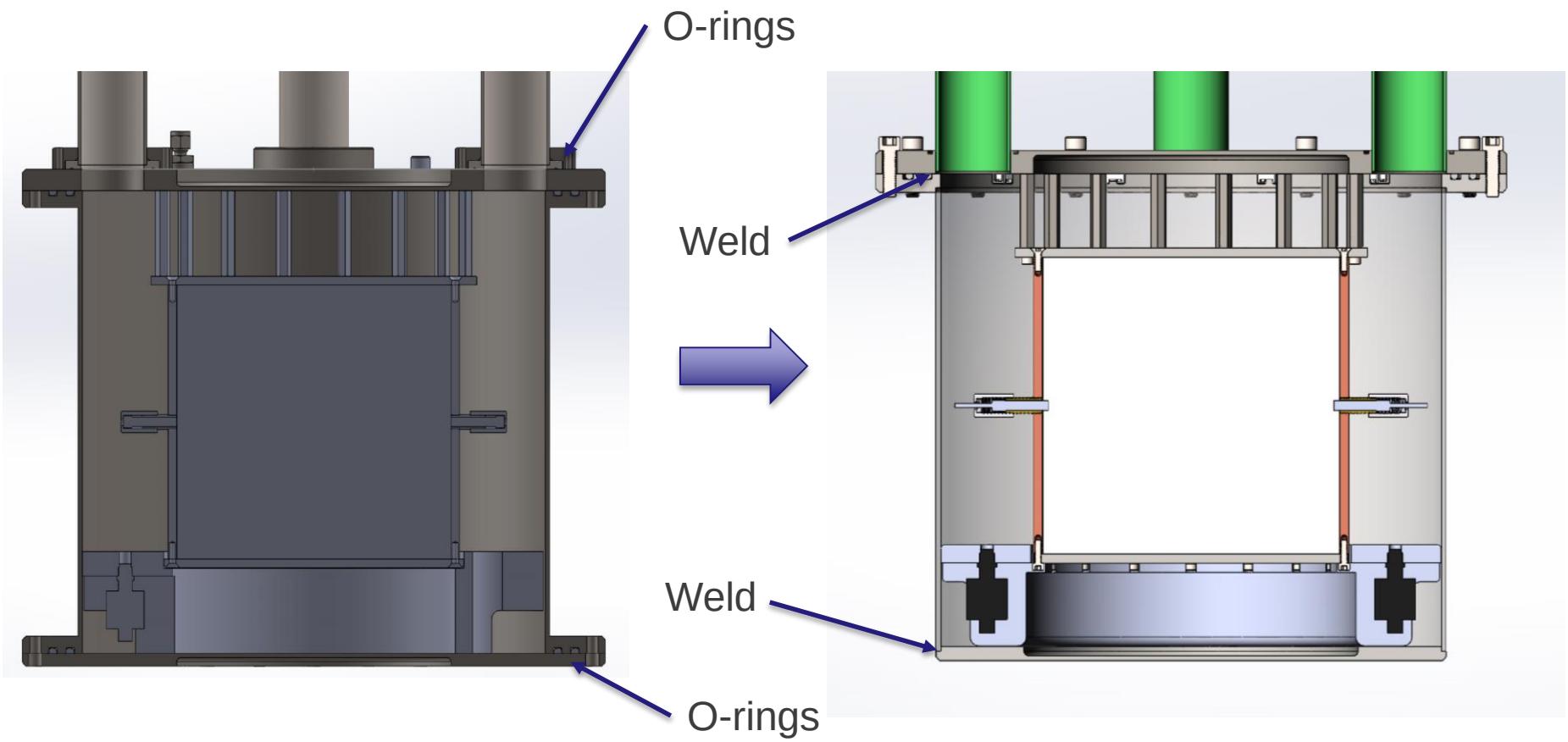
Source Execution Team
June 27, 2017

Revisions to the Initiator Design since the FDR on February 22, 2017

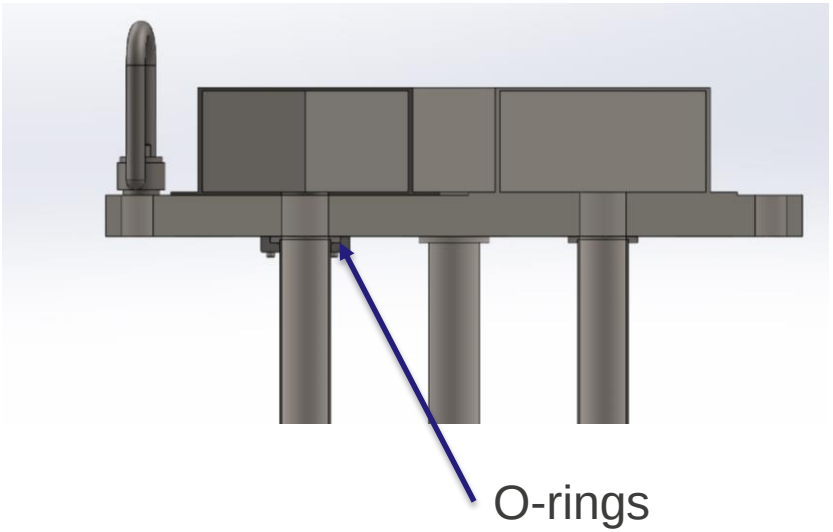
- Replaced O-ring seals with weld joints at multiple locations
- Revised O-ring material to Kalrez
- Added a support ring for the copper/PBX-9501 assembly
- Added two float gages to the internal volume of the initiator
- Added additional seal welds to the vertical tube structure
- Added support frames along the vertical tube structure
- Incorporated a strongback to facilitate assembly and handling

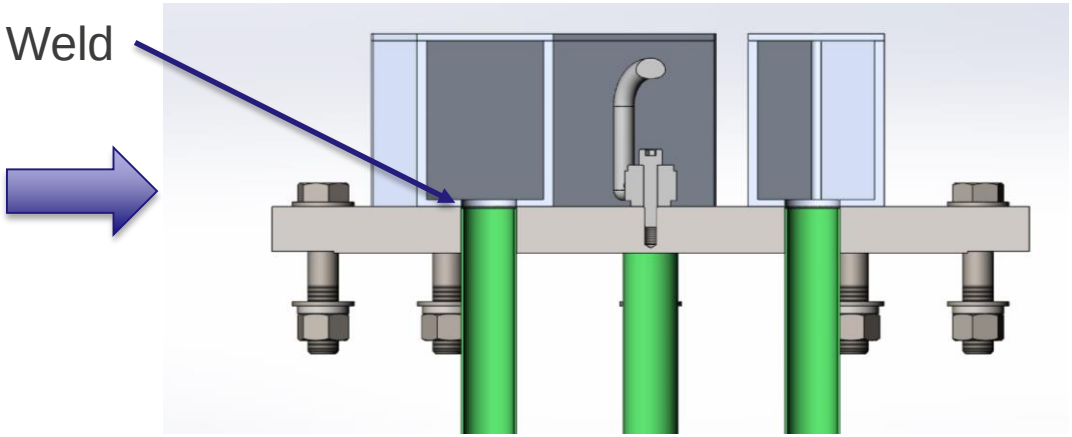
Redesign of joints from O-rings to welds (Initiator)



- LANL plans to leak test the assembly at LANL and at NNSS
- LANL plans to do a long time test in nitromethane

Redesign of joints from O-rings to welds (Top Cover)





- **Revised O-ring material to Kalrez**

Key to O-Ring Material Compatibility Ratings	
(4)	Good, both for static and dynamic seals
(3)	Fair, usually OK for static seals
(2)	Sometimes OK for static seals; not OK for dynamic seals
(1)	Poor
(0)	No Data

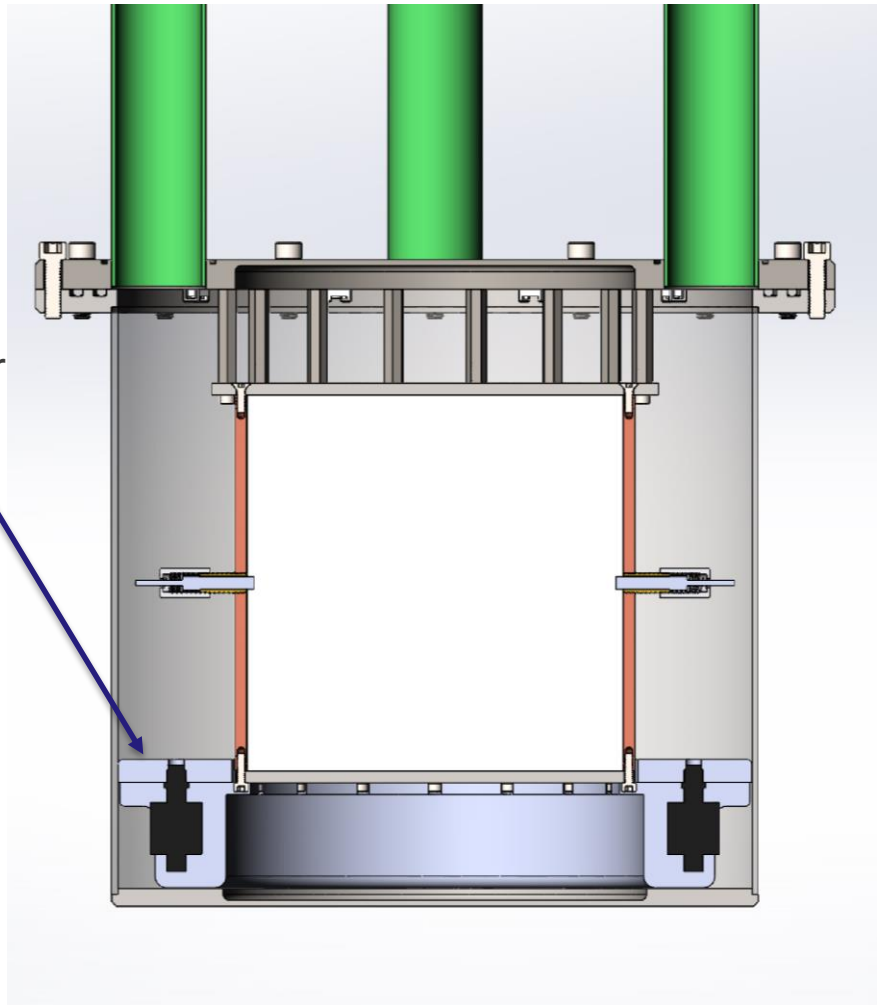
O-Ring Compatibilities

Order by Rating

O-Ring Materials Compatible with Nitromethane (select a material to show its compatible chemicals)		
Aflas (0)	Buna-N (Nitrile) (1)	Butyl (3)
Chemraz (4)	Epichlorohydrin (0)	Ethylene-Propylene (3)
Fluorocarbon (1)	Fluorosilicone (1)	Hypalon (2)
Kalrez (4)	Natural Rubber (3)	Neoprene (1)
Nitrile, Hydrogenated (1)	Polyacrylate (1)	Polysulfide (0)
Polyurethane, Cast (0)	Polyurethane, Millable (1)	Silicone (1)
Styrene Butadiene (0)	Teflon, Virgin (4)	Vamac (0)

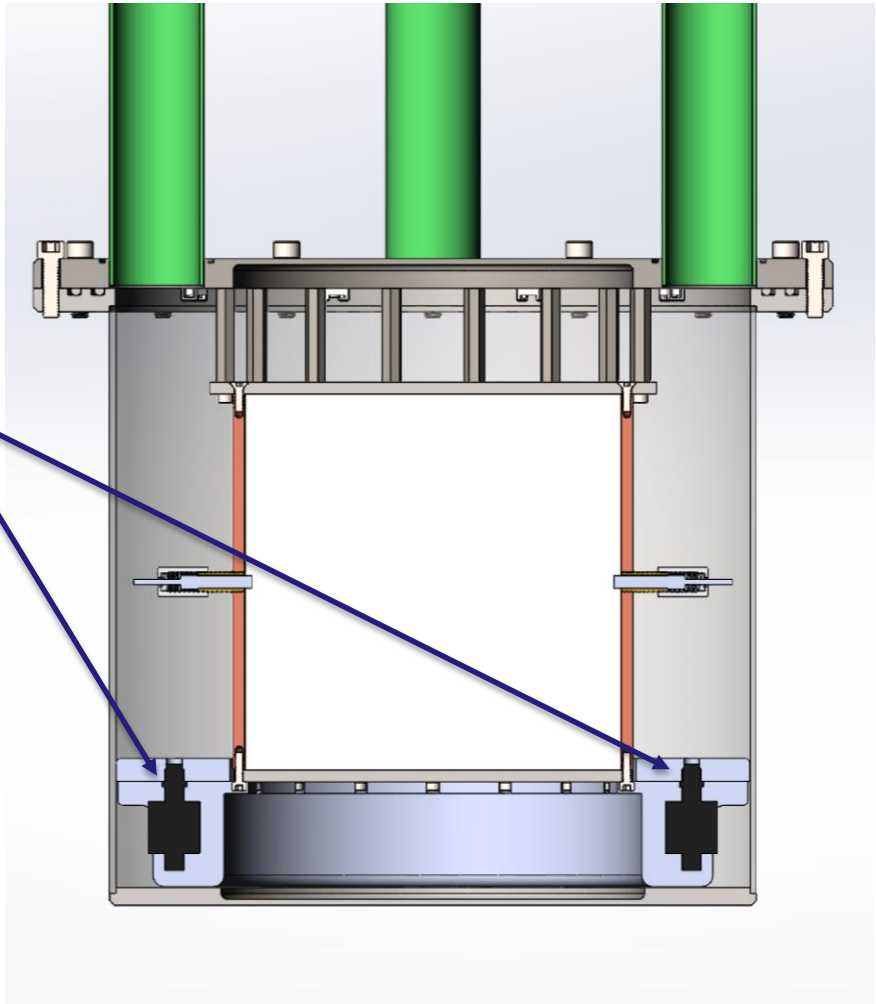
Added a Support Ring to the Copper/PBX-9501 Assembly

The ring supports the copper/PBX 9501 assembly during transport (assembly is horizontal)

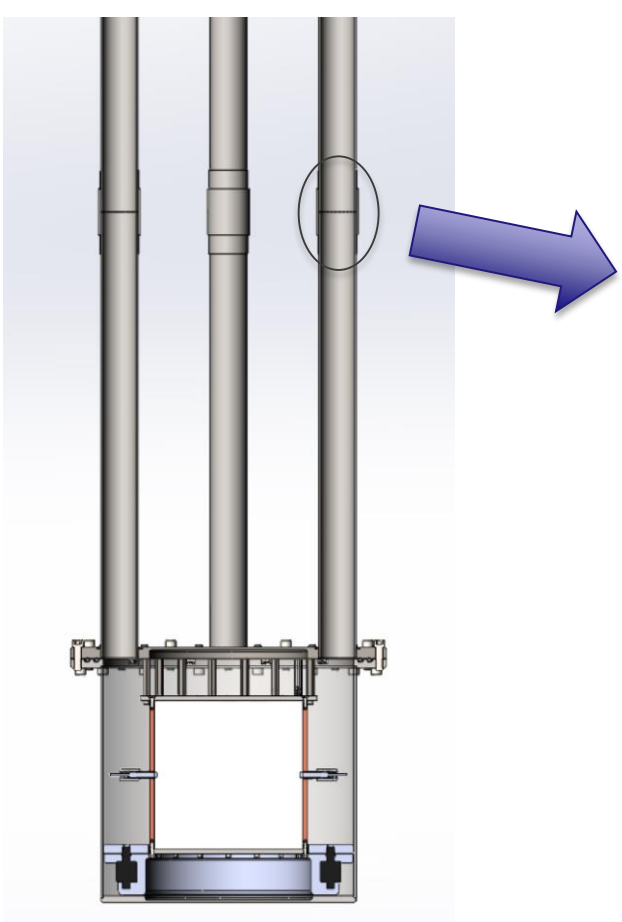


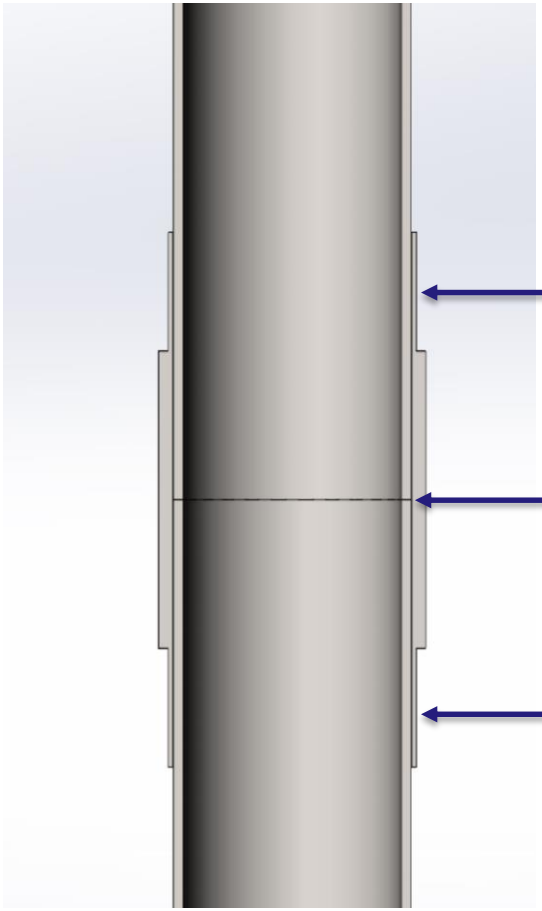
The ring was not included during initiator testing. LANL's Shock Physics SME's have endorsed the design. This canister design feature will be incorporated in the Admiral's test.

- **Added Two Float Gages to the Internal Volume of the Initiator**



- **Added Additional Seal Welds to the Vertical Tube Structure**



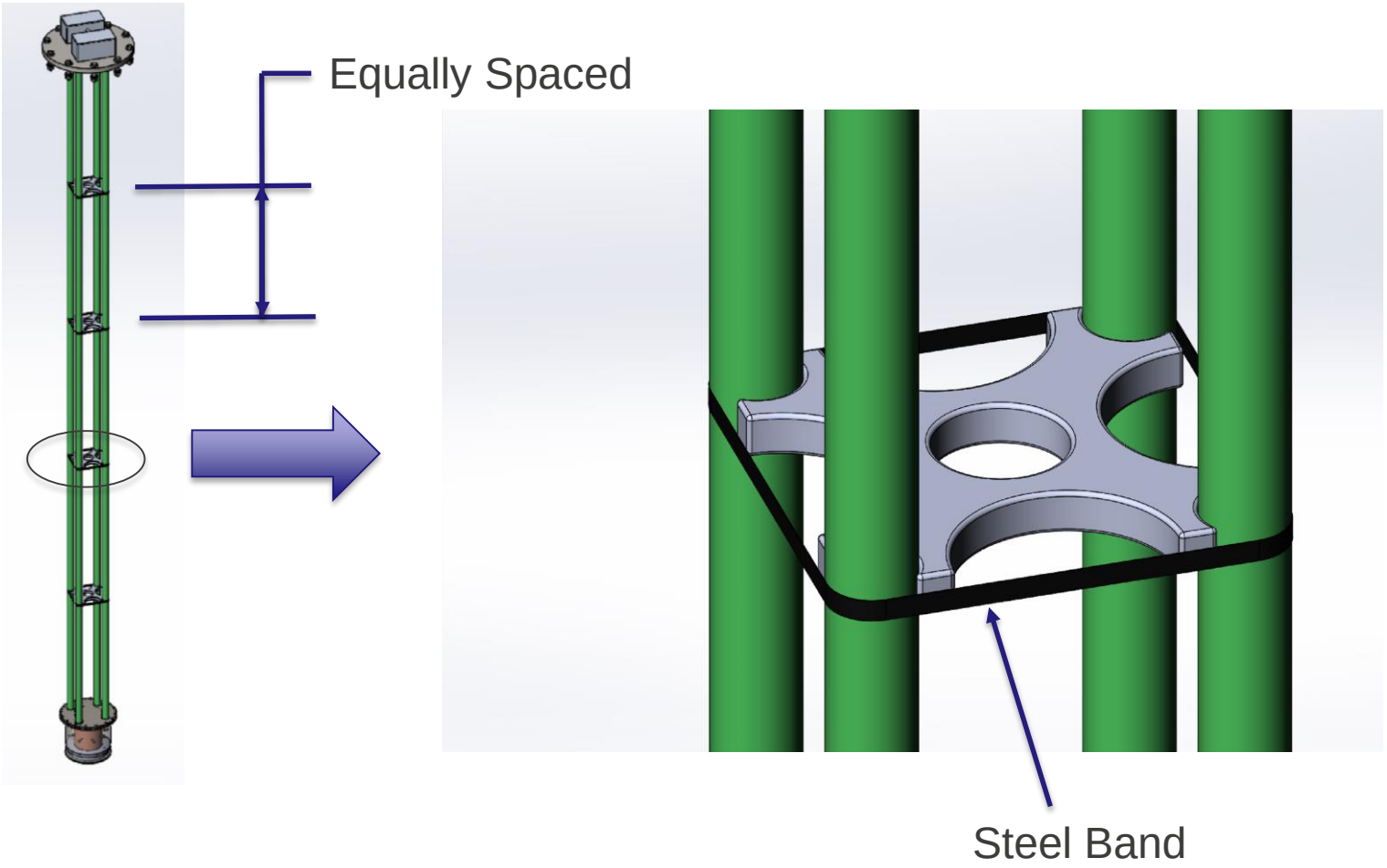


Leak tight weld after installing sleeve

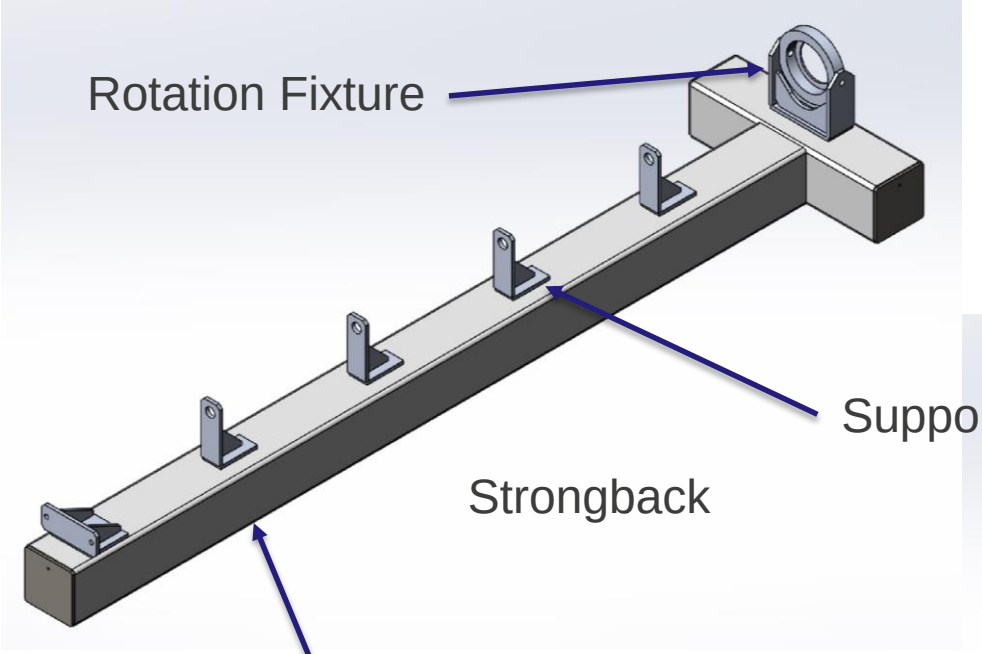
Tube butt weld prior to installing sleeve

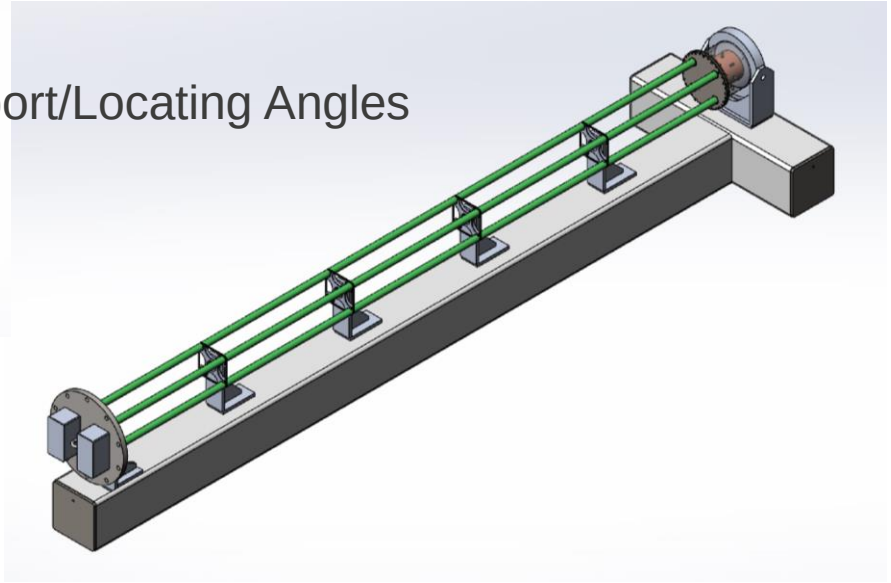
Leak tight weld after installing sleeve

- **Added Support Frames Along the Vertical Tube Structure**



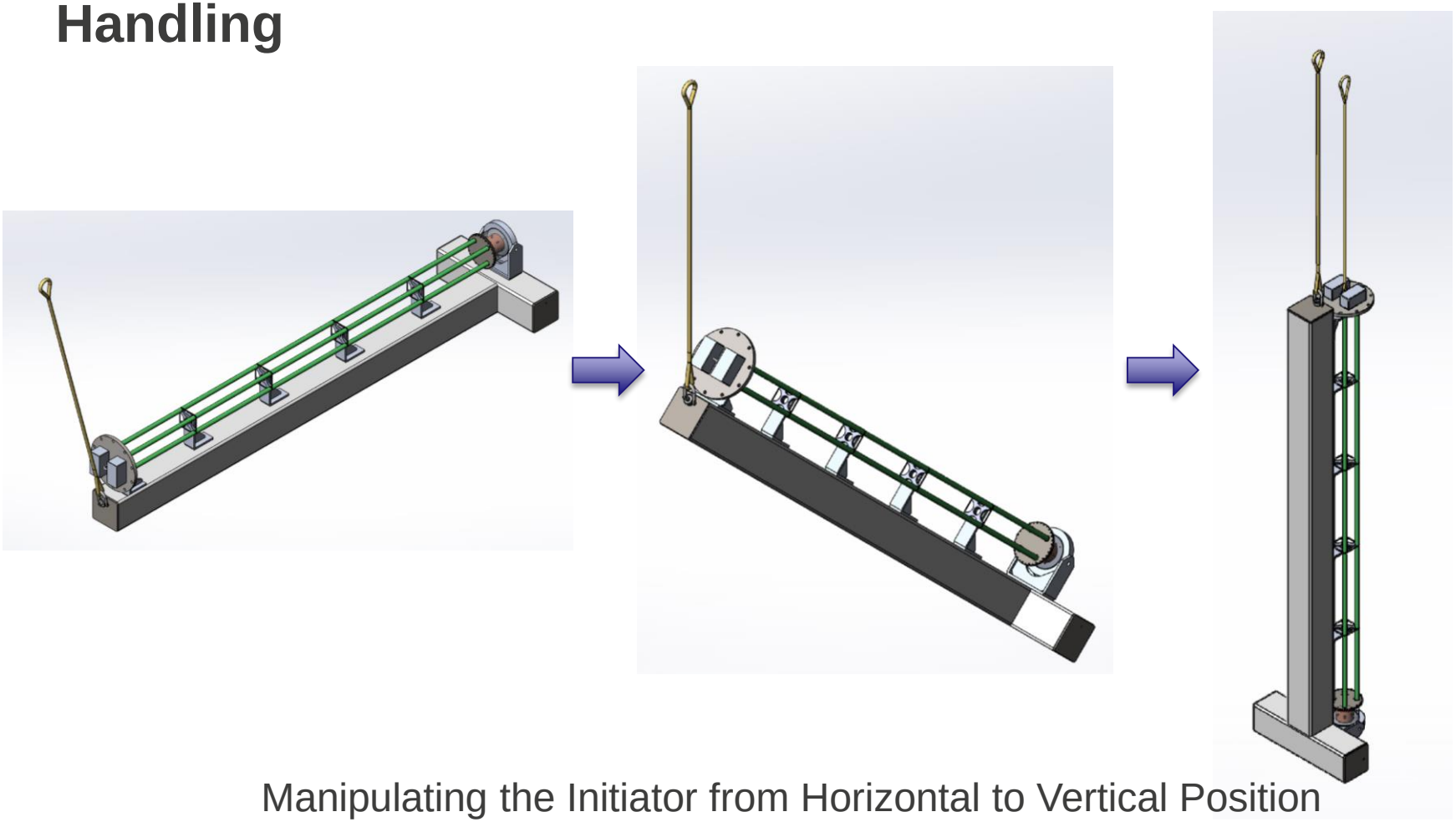
- **Incorporated a Strongback to Facilitate Assembly and Handling**





Strongback with Initiator Assembly Installed

- **Incorporated a Strongback to Facilitate Assembly and Handling**



Manipulating the Initiator from Horizontal to Vertical Position
2 Cranes required to remove initiator from strongback

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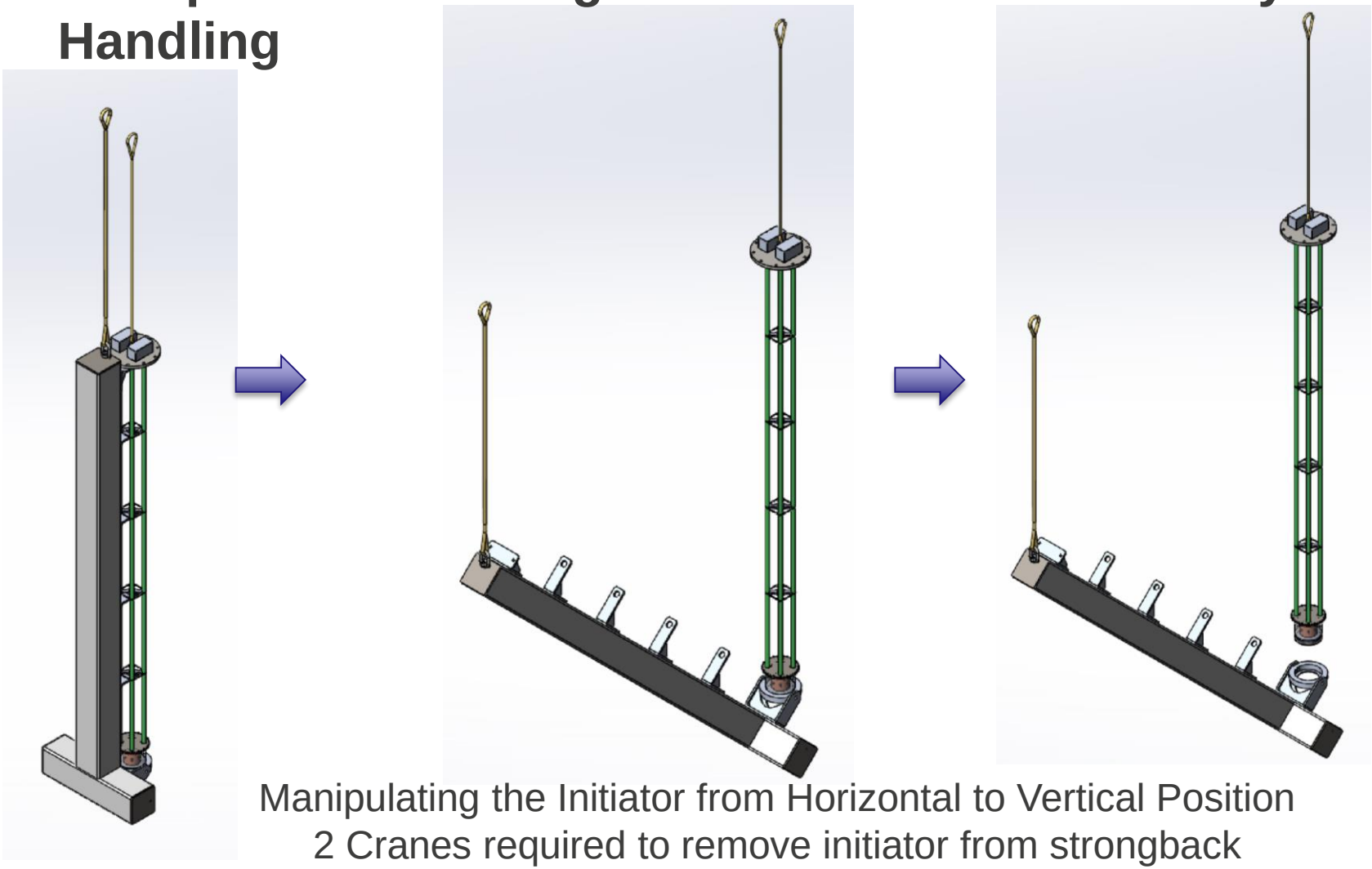
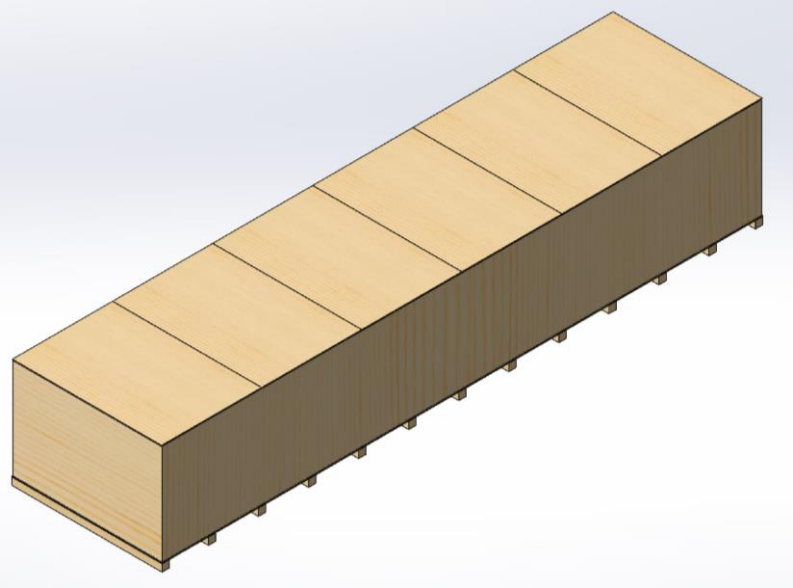
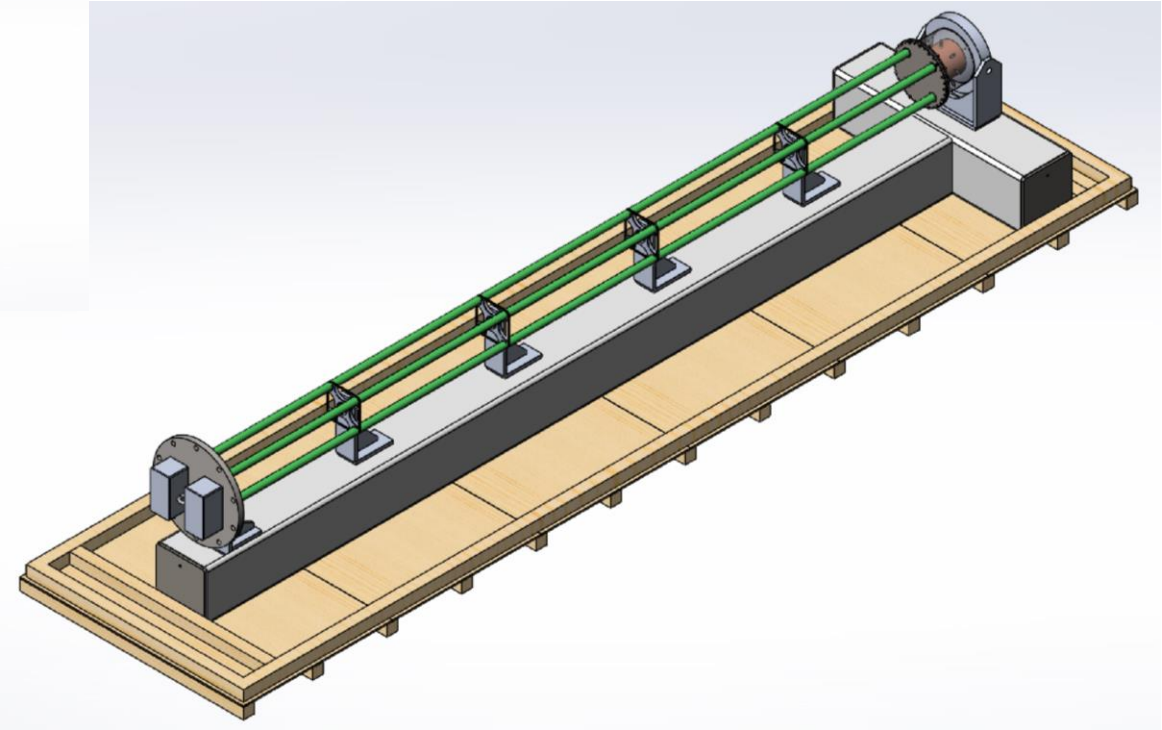


Manipulating the Initiator from Horizontal to Vertical Position
2 Cranes required to remove initiator from strongback

- # Initiator Shipping Container





Issues that still need to be Resolved

- Location of the initiator within the canister to establish the length of the aluminum tubes for each assembly. Temperature changes in the nitromethane varies the volume.